

Tuberculosis

Tuberculosis (TB) is an old disease. It has been known by many names including consumption, wasting disease, and white plague. TB was discovered to be contagious in 1865. The bacteria that cause the disease were identified in 1882. Even though the bacteria and means of spread were recognized, a drug that could kill the bacteria was not discovered until 1943. In the interim, infected persons, who were able to afford the cost, were sent to sanatoriums and rest homes as treatment. While isolating the ill persons from the rest of society, the forced rest and good nutrition aided the body's healing process. Mammoth Cave in southern Kentucky once served as a sanatorium when a group of tuberculosis patients moved in hoping that the cool, constant temperatures of the cave would improve their disease.¹

With the discovery of streptomycin in 1943 and two other drugs effective against the TB bacteria by 1952, the cure rate drastically increased and the death rate dramatically decreased. Sanatoriums closed. Health care officials thought that the disease could be eliminated from the U.S. by 2010.² Public health dollars were diverted to other areas. In 1985, 22,201 cases of tuberculosis were reported,³ the fewest cases since reporting began in 1953 (more than 84,000 cases were reported that year).⁴

However, after 1985 the trend began to reverse. The Centers for Disease Control and Prevention (CDC) attributed the increase in reported tuberculosis cases to four factors:

1. Increase in HIV cases,
2. Immigration from countries where TB is common,
3. Spread of the disease in specific populations such as prisons, jails, and homeless shelters, and
4. Cuts in funding for TB control and other public health efforts.⁴

The gradual trend for increased cases continued through 1992 and then began to decline once again. During 1997, a total of 19,855 cases of TB were reported to CDC from the 50 states and the District of Columbia.⁵

Davidson County's reported cases of tuberculosis from 1990 through 1997 mirrors the United States trends as discussed above with two exceptions. While the upward trend nationwide peaked in 1992, Nashville's upward trend did not end until 1993 when 98 cases were reported. And even more significantly, Nashville's decreasing trend in reported TB cases reversed again in 1997. Twenty-one more cases of TB were reported in Davidson County in 1997 than in 1996.

Tuberculosis is caused by the bacteria *mycobacterium tuberculosis* (*M. tuberculosis*) and is spread from person-to-person through the air. A person with tuberculosis who coughs or sneezes may produce small droplets containing the bacteria that may remain suspended in the air for several hours. Transmission of the disease may occur when another person inhales the droplets. However, not everyone exposed will develop tuberculosis infection or disease. About 30% of people who spend prolonged periods of time with someone who has infectious TB disease will become infected with *M. tuberculosis*.⁶

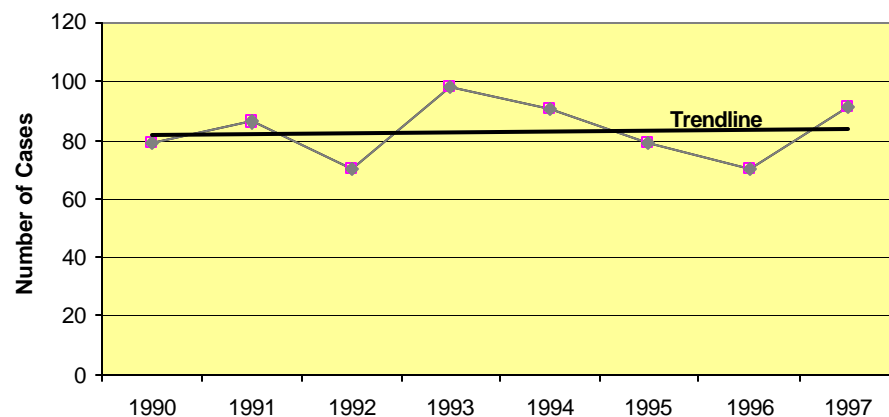
Once inhaled the bacteria can reach and affect any part of the body including the lungs, the kidneys, the brain, and bone. Persons with TB infection have the TB bacteria in their bodies but their immune systems are controlling the spread of the infection. The infection may be detected by use of a tuberculin skin test. Persons at this stage are not infectious to others and have no symptoms.

About 10% of all people who have TB infection will develop disease at some point in their lives. The remaining 90% will stay infected, but will not develop disease, for the rest of their lives. This rule does not apply, however, to people who are also infected with HIV. The risk of developing TB disease is 7% to 10% **each year** for persons infected simultaneously with HIV and *M. tuberculosis* instead of the 10% **over a lifetime** for persons without HIV infection.⁷ Of the people who develop disease, 85% will be disease of the lungs, pulmonary tuberculosis.⁷

Trend

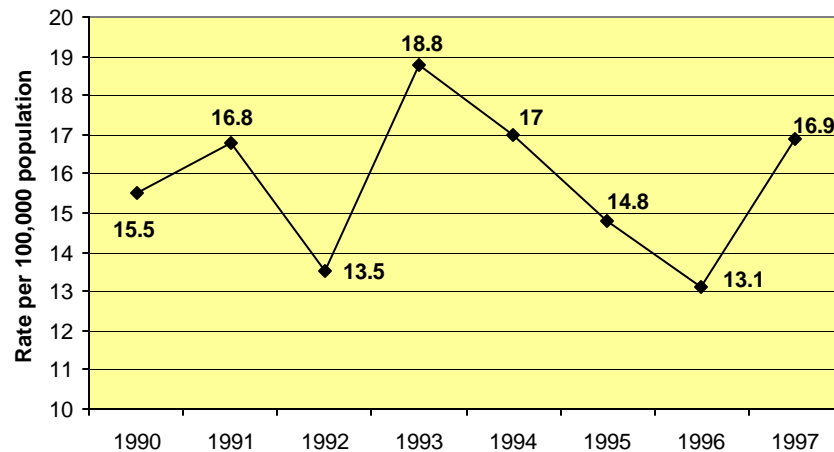
A total of 663 cases of tuberculosis have been reported in Davidson County from 1990 through 1997. On average, 83 cases per year were reported. The peak year for new cases of disease was 1993 when 98 cases were reported. The most significant yearly increase in reported cases occurred from 1992 through 1993 (28 cases). However, this increase is closely followed by the years 1996 through 1997 when the increase was twenty-one cases. See figure 22.

**Figure 22 : Reported Tuberculosis Cases
Davidson County, Tennessee, 1990 - 1997**



The incidence, number of new cases per 100,000 population, of tuberculosis is seen in figure 23. In 1993, when the most cases of diseases were reported, the rate was 18.8.

**Figure 23 : Incidence Rate of Reported Tuberculosis Cases, Davidson County, Tennessee
1990 - 1997**



Who had more reported cases of tuberculosis in Davidson County?

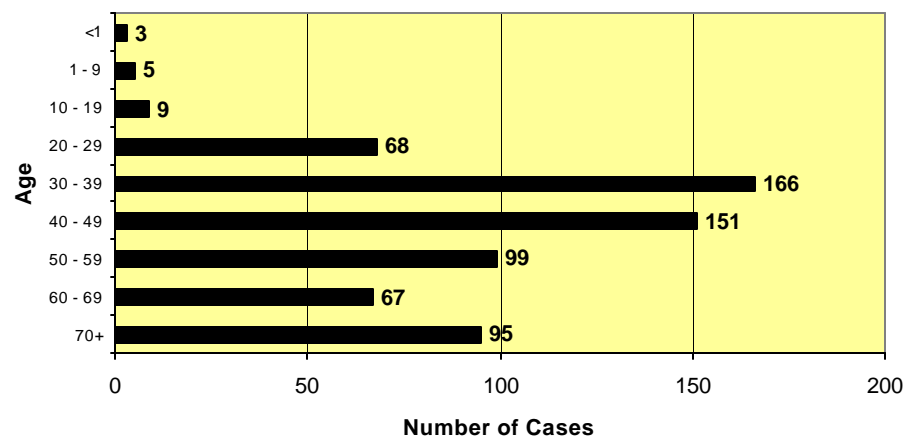
Reported cases of tuberculosis in Davidson County from 1990 through 1997 occurred most commonly in persons who were:

- between the ages of 30 - 49,
- black,
- male, and
- members of specific high risk groups such as the homeless, residents of prisons, and intravenous drug users.

Age

From figure 24, we observe that reported cases of TB most commonly occurred in the adult 30 – 50 year age group and occurred least often in persons under the age of twenty.

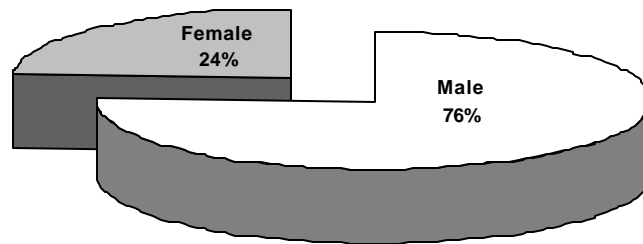
**Figure 24 : Reported Tuberculosis Cases by Age, Davidson County, Tennessee
1990 - 1997**



Gender

Seventy-six percent of reported cases of TB between 1990 and 1997 were male while 24% were female. See figure 25.

Figure 25 : Percent of Reported Tuberculosis Cases by Gender, Davidson County, Tennessee, 1990 - 1997



Race

Over one half of the total reported cases of tuberculosis, 52%, were black (347 cases). With the exception of 1992 when 34 cases were reported for both blacks and whites, reported cases among blacks has exceeded the number of cases reported for whites every year from 1990 through 1997. The number of reported cases among persons of other race has ranged consistently between 0 and 10 cases. See figure 26.

Figure 26 : Reported Tuberculosis Cases by Race Davidson County, Tennessee, 1990 - 1997

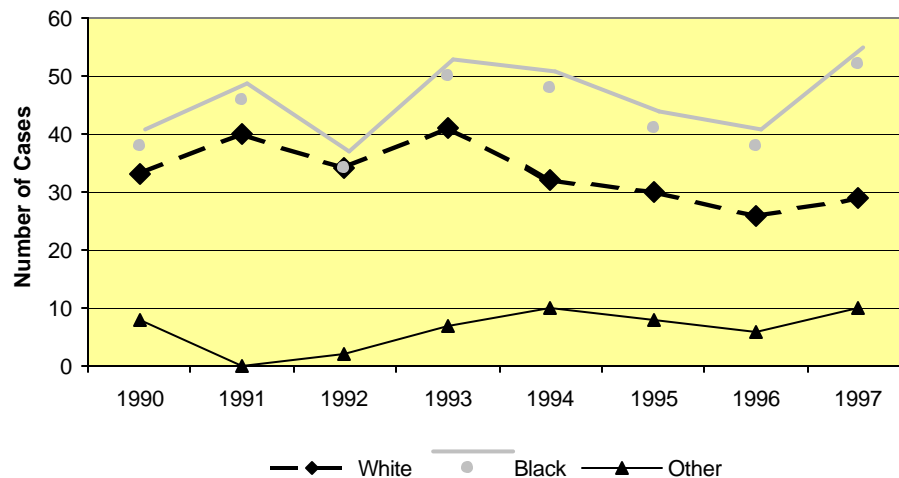


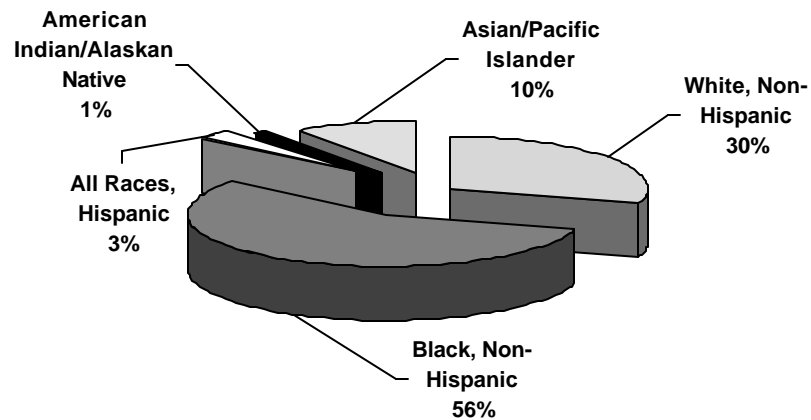
Table 5 represents the number of reported cases of tuberculosis by race and gender.

Table 5 : Reported Cases of Tuberculosis by Race and Gender, Davidson County, Tennessee, 1990 - 1997

	All Races			White			Black			Other		
Year	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
1997	91	61	30	29	19	10	52	37	15	10	5	5
1996	70	59	11	26	22	4	38	32	6	6	5	1
1995	79	65	14	30	25	5	41	35	6	8	5	3
1994	90	72	18	32	28	4	48	35	13	10	9	1
1993	98	72	26	41	34	7	50	33	17	7	5	2
1992	70	52	18	34	25	9	34	26	8	2	1	1
1991	86	70	16	40	32	8	46	38	8	0	0	0
1990	79	52	27	33	26	7	38	20	18	8	6	2
Total	663	503	160	265	211	54	347	256	91	51	36	15

A further breakout of race and ethnicity for reported tuberculosis cases in 1997 is shown in figure 27.

Figure 27 : Percent of Reported Cases of Tuberculosis by Race and Ethnicity, Davidson County, Tennessee, 1997



High-risk Populations

When examining data pertaining to tuberculosis disease in the community, it is helpful to look at the number of reported cases among some specific high-risk populations. See Table 6.

**Table 6 : Number of Tuberculosis Cases Among At-risk Populations,
Davidson County, Tennessee, 1997**

Homeless		Resident of Prison		Long-term Care		Intravenous (IV) Drug User		Non-IV Drug User		Excess Alcohol	
Yes	% of Total	Yes	% of Total	Yes	% of Total	Yes	% of Total	Yes	% of Total	Yes	% of Total
20	22	7	8	2	2	7	8	22	24	29	32

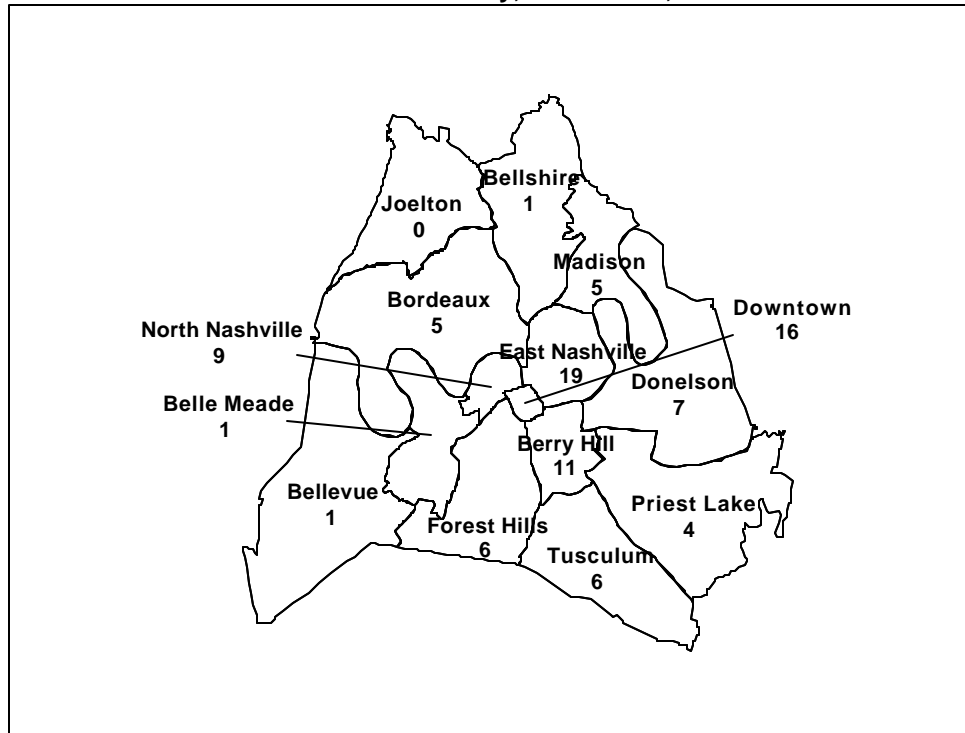
In addition, four cases (4%) of tuberculosis in 1997 were in persons employed in the health care field. Thirty-nine cases (43%) occurred in persons who had not been employed within the previous 24 months.

Where were the most cases of diseases reported in Davidson County?

Tuberculosis cases in 1997 were most often reported in the communities of:

- East Nashville/Inglewood 21% of total cases
- Downtown 18%
- Berry Hill/Woodbine 12%
- North Nashville 10%
- Donelson/Hermitage 8%

**Map 3 : Reported Cases of Tuberculosis by Planning District,
Davidson County, Tennessee, 1997**



*Davidson County is divided into 14 planning districts (see Technical Notes).

How does Davidson County rank within Tennessee in reported cases of tuberculosis?

Davidson County ranked second in number of reported tuberculosis cases when compared to Hamilton, Knox, and Shelby counties in 1997. Hamilton County reported the fewest cases with 23. Davidson County had one fifth of the state's total reported tuberculosis cases while having only 10% of the total state population. Davidson County's rate per 100,000 population was the highest of the four compared counties and was twice that of the state of Tennessee. All four counties as well as the state exceeded the U.S. rate of 7.4 per 100,000. See Table 7.

Table 7 : Comparison of Tuberculosis Rates per 100,000 Population, 1997*

D a v i d s o n		H a m i l t o n		K n o x		S h e l b y		T e n n e s s e e	
C a s e s	R a t e	C a s e s	R a t e	C a s e s	R a t e	C a s e s	R a t e	C a s e s	R a t e
9 1	1 7 . 1	2 3	7 . 8	2 8	7 . 6	1 2 3	1 4 . 2	4 6 7	8 . 7

*Data from Division of Tuberculosis Control, Tennessee Department of Health